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EXAMINER

EASHOO, MARK

ART UNIT

PAPER NUMBER

1732

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,345

Applicant(s)

BORER ET AL.

Examiner

Mark Eashoo, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Election/Restrictions***

Applicant's election with traverse of claim group I, claims 1-12, in Paper No. 7, filed 18-Aug-03 is acknowledged. The traversal is on the ground(s) that there is no serious burden on the Examiner if the restriction is not required. This is not found persuasive because the specific considerations given to process claims are not the same as those given to apparatus claims. The examination of process claims requires a search and consideration directed to the process steps as well as the material being processed. Apparatus limitations present in process claims are given weight in how they manipulatively effect the process. This is in direct contrast to the considerations given to the examination of apparatus claims which considers all structures recited and does not give weight to the material which may be processed by the apparatus. Although Applicant's is correct that some of the same art may be used in the examination of each set of claims, the differences in specific considerations given to each claim group create a serious burden upon the Examiner.

The requirement is still deemed proper and is therefore made FINAL.

Claims 13-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claim grouping, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

Priority

The status of the parent application, in line 1, page 1, of the specification is not current because the application has been abandoned. It is requested that Applicant make the appropriate corrections.

Information Disclosure Statement

The information disclosure statements filed 12-Jul-01 and 09-Oct-01 comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Accordingly, they have been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Pertaining to claim 1: The limitation "immediately feeding said pellets without intermediate storage" is indefinite because the piece of machinery or step from which the pellets are being transferred 'to and from' is not clearly set forth. It is noted that if this 'feeding' is from the crystallizing step to the condensing step, then claim 6 appears to be a duplicate claim if step b) of claim 6 is selected.

Pertaining to claim 2: The limitation "preferably a plunger characteristic" is indefinite because it cannot be clearly ascertained if the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 2 recites the broad recitation "predetermined characteristic", and the claim also recites "plunger characteristic" which is the narrower statement of the range/limitation.

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Pertaining to claim 3: Claim 3 recites the limitation "said used plastic material". There is insufficient antecedent basis for this limitation in the claim. For the purpose of further examination, "said used plastic material" has been interpreted as 'said non-virgin plastic material'.

The limitation "preferably being in counter-direction to said continuous flow" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 3 recites the broad recitation "a stream of gas", and the claim also recites "being in counter-direction to said continuous flow" which is the narrower statement of the range/limitation.

The limitation "preferably being nitrogen" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 3 recites the broad recitation "an inert gas", and the claim also recites "being nitrogen" which is the narrower statement of the range/limitation.

The limitation "preferably being nitrogen" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 3 recites the broad recitation "an inert gas", and the claim also recites "being nitrogen" which is the narrower statement of the range/limitation.

The limitation "particularly polyethylene terephthalate" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 3 recites the broad recitation "a polyester material", and the claim also recites "polyethylene terephthalate" which is the narrower statement of the range/limitation.

Pertaining to claim 4: The limitations "preferably comprising sucking material off" and "preferably the gas of at least one of..." are indefinite because it cannot be clearly ascertained is the limitations are alternatives or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 4 recites the broad recitation "a step of decontaminating", the claim also recites "preferably comprising sucking material off" which is the narrower statement of the range/limitation, and further recites an even narrower statement of "preferably the gas of at least one..."

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Pertaining to claim 5: The limitation "preferably comprising the intrinsic viscosity" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 5 recites the broad recitation "grading value", and the claim also recites "preferably comprising the intrinsic viscosity" which is the narrower statement of the range/limitation.

Pertaining to claim 6: Claim 6 recites the limitation "said used plastic material". There is insufficient antecedent basis for this limitation in the claim. For the purpose of further examination, "said used plastic material" has been interpreted as 'said non-virgin plastic material'.

For clarity, it is noted that claim 6 recites the phrase "preferably comprising". In this instance, the term 'preferably' appears to clearly indicate that the steps that follow are "options or alternatives" and not specifically required to meet the metes and bounds of claim 6.

Pertaining to claim 12: The limitation "preferably less than 45%" is indefinite because it cannot be clearly ascertained is the limitation is an alternative or not. Furthermore, the term "preferably" appears to indicate two different ranges. In the present instance, claim 12 recites the broad recitation "less than 50%", and the claim also recites "preferably less than 45%" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. (US Pat. 5,876,644) in view of Voigt (US Pat. 5,587,186) and Russemeyer et al. (US Pat. 5,119,570).

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Regarding claim 1: Nichols et al. teaches the basic claimed process of upgrading cleaned and used plastic, comprising the steps of: continuously extruding used plastic material (fig. 1, elements 12, 13, 15, and 16); solid state polymerization which causes a 0.1 increase in intrinsic viscosity (Tables 1, 3, and 4); and extruding plastic to form pellets (Figs. 1 or 2). It is noted that Nichols et al. teaches a continuous overall process without an intermediate storage step following extrusion (Fig. 1). Therefore Nichols et al. inherently renders obvious a step of continuous pellet feeding from one processing station to another without intermediate storage. Also, it is noted that the terms "used" or "recycled" are commonly understood in the plastic processing art as being equivalent to "non-virgin".

Nichols et al. teaches forming pellets in general, but does not teach forming pellets by cutting elongated strands. Nonetheless, Voigt teaches forming pellets by cutting elongated strands (2:53-63). Nichols et al. and Voigt are combinable because they are both concerned with a similar technical difficulty, namely, forming polymer pellets. At the time of invention a person having ordinary skill in the art would have found it obvious to have formed pellets, as taught by Voigt, in the process of Nichols et al., and would have been motivated to do so because the prior art in general suggests that the means of Voigt are among several equivalent and alternative ways of forming plastic pellets.

Nichols et al. does not teach continuous crystallization in a stream of hot nitrogen gas at a crystallization temperature. Nonetheless, Russemeyer et al. teaches continuous crystallization in a stream of hot nitrogen gas at a crystallization temperature (4:61-6:20). It is noted that the crystallization process of Russemeyer et al. uses a fluidized bed having plug/plunger flow characteristics (5:13-34). Nichols et al. and Russemeyer et al. are combinable because they are both concerned the same field of endeavor, namely, recycling polyester materials. At the time of invention a person having ordinary skill in the art would have found it obvious to continuously crystallized a polyester polymer in a stream of hot nitrogen gas at a crystallization temperature, as taught by Russemeyer et al., in the process of Nichols et al., and would have been motivated to do so Russemeyer et al. suggests that such crystallization allows increased purity to be achieved by solid-state polymerization. It is noted that high purity is desired by Nichols et al.

Regarding claim 2: As mentioned above, the crystallization process of Russemeyer et al. uses a fluidized bed having plug/plunger flow characteristics (5:13-34).

Regarding claim 3: Nichols teaches used or non-virgin polyethylene terephthalate (1:29-3:30).

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Alternatively, Nichols et al. teaches that a 0.1 decrease in intrinsic viscosity due to extrusion is then corrected for by solid-state polymerization of about 0.1 (4:30-40 and Tables 1, 3, and 4). As such, the step of solid state condensing occurs without a substantial change in intrinsic viscosity between pellets prior to extrusion and after the condensing step.

Alternatively, it is noted that Russemeyer et al. teaches a step of heating pellets in a hot nitrogen gas stream (4:61-6:20). Nichols et al. and Russemeyer et al. would be combined for the same reasons as set forth above.

Regarding claim 4: Nichols teaches decontaminating or washing the used plastic material from adhering substances such as dirt (3:43-58).

Regarding claims 5, 7, 8 and 9: Nichols et al. teaches that a 0.1 decrease in intrinsic viscosity due to extrusion is then corrected for by solid-state polymerization of about 0.1 (4:30-40 and Tables 1, 3, and 4). As such, the step of solid state condensing occurs without a substantial change in intrinsic viscosity between pellets prior to extrusion and after the condensing step. Nichols et al. clearly measures a quality of the material and then determines the intrinsic viscosity. As such, the measured value is inherently a form of a "grading scale". Furthermore, since Nichols et al. teaches that both the apparatus and techniques of solid state polymerization are "generally well known", it appears that it is well within the skill level of an ordinary artisan to control the appropriate process conditions, including temperature and residence time, to achieve the desired increase in intrinsic viscosity of Nichols et al.

Furthermore, since Nichols et al. teaches that the solid state polymerization is operated to achieve a desired range of intrinsic viscosity, namely an increase of about that was present in the material prior to extrusion, it is well within the skill of a person having ordinary skill in the art, if not inherent therein, that such physical property would serve as a basis form process control.

Regarding claim 6: Nichols teaches admixing fresh/virgin plastic pellets to the used or non-virgin plastic materials (Fig. 2).

Regarding claim 12: Russemeyer et al. teaches a degree of crystallization of about 30-35% (1:55-60 and 9:30-35). Nichols et al. and Russemeyer et al. would be combined for the same reasons as set forth above.

Allowable Subject Matter

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Allowable Subject Matter

Claims 10 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Although gas barrier enhancing additives are generally well known in the art, the prior art of record does not teach or suggest that such additive would be effective after being undergoing the thermal processing associated with both the extrusion and solid-state polymerization steps.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Eashoo, Ph.D. whose telephone number is (703) 308-3606. The examiner can normally be reached on 7am-3pm EST, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaanni can be reached on (703) 305-5493. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Mark Eashoo, Ph.D.
Primary Examiner
Art Unit 1732

11/17/03
me

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